

DESCRIPTION

"Milk-based chewy sweet and method for its production"

- 5 The present invention relates to a milk-based chewy sweet and to a method for its production.

Chewy sweets are known in the confectionery industry. They are produced by using gelatinising substances, in particular edible gelatine, which is added to a mixture of
10 sugar syrup prepared by being boiled at over 100°C, to which mixture the required flavouring has been added.

After an optional step of aeration, the mass is poured into conventional starch moulds for formation of individual sweets, and is allowed to cool for the time necessary for
15 the subsequent packaging.

For production of a milk-based chewy sweet, it is obviously necessary to add the milk or a substitute for it, to the mixture of syrup and gelatine.

- 20 However, because of the substantially high temperatures at which the gelatine is mixed with the sugar syrup, the problem arises of darkening of the mass obtained, and therefore of the sweet, caused by the occurrence of Maillard's reaction in the milk. The sweet would thus acquire a brown colouring, which could modify the final colouring required.

The object of the present invention is thus to solve the above-described problem such as to obtain a sweet which is at the same time chewy and milk-based, and in particular is white, such as to recall clearly the ingredient contained.

5 The problem is solved by means of the method according to the following claim 10.

The invention thus relates to a method comprising the step of addition of a gelatinising substance. The said gelatinising substance is preferably edible gelatine, and more preferably pork jelly, but use can be made of all natural or synthetic
10 gelatinising substances which are known to persons skilled in the production of chewy sweets.

The step of addition of the gelatine is followed by addition to the mixture, of milk, which can be in the form of concentrated milk or alternatively powdered milk,
15 suitably solubilised in water. The milk is preferably added as concentrated milk. Use of the term "milk" means any from amongst skimmed milk, half-fat milk and full-cream milk.

The method according to the invention thus makes it possible to obtain a milk-based
20 chewy sweet which is generally white, owing to the colouring derived from the milk itself. It will be appreciated that, as is known to experts in the confectionery industry, further substances can be added to the mass, for example flavourings and/or dyes and/or juices of vegetable origin. Thus, according to the invention, before the pouring into the moulds takes place, appropriate substances may be added, so as to
25 produce sweets which have a high percentage of milk, and have a white basis, but

can optionally be provided with stripes or dots in a different colour. Alternatively, the milk-based sweet according to the invention can be coloured by means of the addition of suitable dyes selected. Flavourings can also be added, such as a peach or strawberry flavour, in order to produce sweets with a specific flavour.

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The invention will now be described in greater detail with reference to some practical embodiments, provided purely by way of indicative and non-limiting example.

All the percentages are percentages by weight; in the method these are percentages
10 by weight out of the total mass, and in the final sweet they are percentages by weight of the weight of the sweet obtained. Whenever the term "°Bx" is used, this means "Brix level", corresponding to the sugar content by means of evaluation of the optical activity of n grams of sugar out of 100 grams of solution at 20°C.

15 **Example 1**

In a double-base stainless-steel container, a sugar syrup was prepared, consisting of 69 Kg of D.E. 38 glucose syrup and 31 Kg of sorbitol at 68°Bx, and was boiled until a refractometric residue of 85°Bx was obtained, i.e. at a temperature of 113°C.

20 To this syrup boiled at 85°Bx and heated to a temperature of 113°C there was added 150 Bls pork jelly (50% jelly + 50% water at 50°C), prepared at least 2 hours previously, and cut into pieces, in proportions of 17.6 Kg for 88 Kg sugar syrup. During this operation, heat was not applied to the double base. When the jelly had dissolved, there was addition of 27.1 Kg of very fine sugar, 0.375 Kg of 80% lactic
25 acid, 0.110 Kg of milk flavouring and 0.038 Kg of cream flavouring.

At this point, 88 Kg of partially skimmed, sweetened concentrated milk with 5% fatty substances was added, with a refractometric residue of between 70 and 80 °Bx, which had been prepared separately and kept at ambient temperature. The addition of the above-described quantity of milk, equal to approximately 40% by weight of the mixture as a whole, and which was at ambient temperature, gave rise to further cooling of the mass which was already in the cooling stage. It was found that Maillard's reaction substantially did not occur, and the mass did not assume any brown colouring.

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On completion of the mixing of the concentrated milk, the temperature of the mass was adjusted to 90°C, with small jets of steam applied to the double-base container. Subsequently, part of the mass was decanted into a mixer device and aerated with air blown in, up to a specific weight of 1.05. The two parts, i.e. the aerated part and the non-aerated part, with a refractometric residue of approximately 78°Bx, were poured into respective conventional starch boxes, with regulation of the temperature to 80°C, and a pouring speed equal to 10-15 boxes/minute.

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On completion of the pouring operation, the boxes were transferred to the gelatinising chamber with a temperature of 20°C. After 24 hours the containers were transferred to an oven at 35°C for 18 hours in order to raise the Bx level, both of the part which had been aerated, and of that which had not been aerated, in order to assure the long-term stability of the product and to reduce the microbiological risk. For the part which had been aerated, the Bx level was increased to a value at least equal to 83.

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The sweets obtained were removed from the starch containers after cooling which lasted for approximately 4 hours.

- 5 The sweets had a good milky-white colour. Those obtained from the mass subjected to aeration each weighed approximately 2.1 g, whereas those obtained from the mass which had not been aerated each weighed approximately 2.4 grams.

The packaging in a bag was carried out after 24 hours.

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Example 2

The components in example 1 were mixed in a double-base container, with the difference that, instead of the very fine sugar, 27.1 Kg of tapioca starch was added.

- 15 By adding dyes and juices, sweets provided with coloured stripes were obtained.

After the same operations as those illustrated with reference to Example 1, the sweets obtained had a substantially sandy structure.

Example 3

20 In a double-base stainless-steel container, the same components as those indicated in Example 1 were mixed with 111.0 Kg of sugar syrup obtained by means of boiling at 113°C 72 Kg of glucose syrup and 58 Kg of sorbitol. The operative methods were the same as those illustrated with reference to Example 1.

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The sweets obtained had a good milky-white colour, an excellent taste and a good level of softness.

Example 4

5 In a double-base stainless-steel container there were poured 68 Kg of sugar syrup prepared by means of boiling at 113°C 18 Kg of glucose syrup and 63 Kg of sorbitol.

With the syrup there were mixed 13.2 Kg of 150 Bls pork jelly (50% jelly + 50% water at 50°C) prepared at least two hours before the mixing with the syrup. Finally,
10 there were added 29.1 Kg of very fine sugar and 110 Kg of concentrated, partially skimmed, sweetened milk, with 5% fatty substances.

The operative methods were the same as those described with reference to Example 1.

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The sweets obtained had a satisfactory required colour and consistency.

Example 5

In a double-base stainless steel container there were inserted 68 Kg of syrup boiled at
20 113°C with the composition indicated in Example 4, and immediately afterwards a quantity of 29.1 Kg of the very fine sugar was added, and the mass was brought up to 115°C. After a short period of cooling of the free wall of the double base, the pork jelly was added in large pieces, with the composition indicated in the preceding Example 4, but prepared only one hour previously. No heating was applied whilst the
25 jelly was dissolving. When the jelly had finished dissolving, 110.0 Kg of 5%

sweetened, partially skimmed, concentrated milk was added and mixed in. The milk was at ambient temperature and lowered the temperature of the mass to 72°C.

This therefore prevented the occurrence of Maillard's reaction and darkening of the mass.

The subsequent operations were those described with reference to Example 1.

The sweets obtained had satisfactory colour and organoleptic characteristics.

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Example 6

111 Kg of sugar syrup boiled at 113°C, with a composition the same as that in Example 3, was introduced into a double-base stainless steel container. 17.6 Kg of jelly prepared like that in Example 5 was added to the syrup, and the operative conditions were the same as those in Example 5.

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The sweets obtained had a satisfactory white colour and organoleptic characteristics.

Example 7

20 Into a double-base stainless steel container, there were inserted 87 Kg of glucose syrup boiled at approximately 113°C, and which therefore had a refractometric residue of 85°Bx. 26.1 Kg of very fine sugar were then introduced, and the mixture of syrup and sugar was brought up to boiling point.

25 17.6 Kg of jelly were then added, with a composition of 50% jelly and 50% water at

60°C, prepared one hour previously.

The concentrated milk, which was partially skimmed, and sweetened, with 5% fatty substances, was added in a quantity of 87 Kg. The other components remained
5 unchanged in comparison with those in Examples 1 to 6. The operative methods were those described in relation to the preceding Example 5.

Example 8

Into a double-base stainless steel container, there were inserted 88 Kg of sugar syrup
10 boiled at 113°C (85°Bx), the composition of which was that specified in Example 1. In the syrup there were inserted 17.6 g of pork jelly, like that in Example 7, prepared one hour previously. The very fine sugar was added in a quantity of 27.1 Kg, and the sweetened, partially skimmed, concentrated milk, with 5% fatty substances, was inserted in a quantity of 88 Kg. The other components remained
15 unvaried, compared with Examples 1 to 7. The operative methods were those described in Example 5.

The sweets obtained had a good milky-white colour and organoleptic characteristics which were altogether satisfactory.

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Example 9

We repeated Example 1 exactly, adding 40 Kg of sweetened, partially skimmed, concentrated milk, instead of 88 Kg.

25 The sweets obtained had a good milky-white colour and organoleptic characteristics

which were altogether satisfactory.

Example 10

We repeated example 1, replacing with milk all of the 27.1 Kg of very fine sugar,
5 and reducing the sorbitol by half to 15.5 Kg. The milk added was 150 Kg instead of
88 Kg.

The sweets obtained had a good milky-white colour and organoleptic characteristics
which were altogether satisfactory.

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Example 11

We repeated example 1, replacing the sweetened, partially skimmed, concentrated
milk, with the same amount of an aqueous solution of approximately 60% based on
powdered milk.

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The sweets obtained had satisfactory organoleptic properties equivalent to those
obtained with the sweetened, concentrated milk.

Table I

20 The present Table contains a comparison of the organoleptic and colour
characteristics of the sweets obtained according to Examples 1 to 10.

The evaluation was carried out with a scale of values from 1 to 3, in which the value
1 represents the level which is scarcely sufficient for sale, the value 3 is the optimum
25 level, and the value 2 is the medium level.

	Ex.1	Ex.2	Ex.3	Ex.4	Ex.5	Ex.6	Ex.7	Ex.8	Ex.9	Ex.10	Ex.11
Colour	2	1	3	3	2	1	3	3	3	3	2
Taste	2	2	2	3	2	2	2	2	2	3	2
Elasticity	3	2	2	1	3	2	2	2	2	1	3
Softness	2	1	3	3	2	1	3	3	3	3	2
Solubility	2	2	3	3	2	2	3	3	3	3	2

As can be seen from the data contained in the table, by means of the method according to the invention it was possible to obtain a sweet with a basis of a white colour, which was at the same time soft like a chewy sweet, and easily soluble. In particular, the sweets in Examples 4 and 10, which contain a high percentage of milk, have optimum properties of colour, softness and solubility. The organoleptic properties of the sweet with coloured stripes produced according to Example 2 were satisfactory.